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The Key-note in Landscape-gardening.

THE first essential of success in arranging grounds is the ability to recognize the characteristic and salient features of a place so as to work in harmony with them instead of coming into conflict with nature. To this end the individual quality of the surroundings of any place ought to be carefully studied before a tree is planted, a structure is erected or a path is laid. Few places, even when comparatively small, are so dull or monotonous that they are without a single feature which is worth emphasizing, and toward which, as a centre, the artist's thought is constantly directed. This may be a distant prospect, or it may be a craggy ledge, a strip of woodland, a noble tree, or only a pleasing sweep of surface. When this commanding feature is selected all the other elements in a consistent scheme of landscape gardening are made subordinate and accessory to it. Of course, this central idea must be distinctive to be interesting, and in carrying it out, if it is to remain distinctive, we must not follow precedent too closely. Men too often plant certain trees in a certain way because other people have set them so, and in this way they are apt to make their estates humdrum and monotonous from lack of individuality. True, if a place is simply one of a hundred similar ones, like a regulation house and lot in a suburban town, there is little to do with such a featureless subject besides some formal planting, whose lines will be determined mainly by the size and position of the house; and such arrangements, when guided by good taste, can, at least, be made interesting.

In a region, however, of open farm-land, or in a woodland opening, or near the sea, the proper way is to study natural effects and subtly to conform all artifices to the suggestions of nature in the neighborhood. A great mass of rock, instead of being concealed by trees and shrubbery, should be made the most of in the outlook, and its lines of rugged strength should not be softened away, or its proportions belittled by any pettiness in its surroundings. If the approach to a dwelling is through a native forest-growth, this naturalness should not be marred by the introduction of species which do not belong to that region. There are enough native under-shrubs which are desirable in themselves, and which will be doubly so in such a place, where they help to emphasize the absence of artificiality.

In any scene it is plainly a mistake to introduce plants which, however beautiful in themselves, contradict the leading idea. Instead of this, we should carry out the central thought in every possible way. If we have a natural ledge of rocks we can encourage native ferns to grow in its crevices, wild vines to trail over its face, and native shrubs and grasses to grow at its base, and thus emphasize its natural aspect and make an artistic picture at the same time. Where the surroundings of the ledge are rough it may be the best practice to clear away only the inhospitable thickets of Brambles and allow Nature herself to weave a tracery of vines upon the rocks, and encourage wild flowers to blossom among them. In planting our native trees in a natural landscape we should use them in such positions as they usually affect, not only because a Willow will be healthy near the water while a Chestnut will thrive on a gravelly hill, but because we are accustomed to see these trees in such places. Stretches of green turf always enhance the effect of trees, but where our object is to preserve as far as possible the wild beauty of an individual spot and bring out the idea of remoteness, the borders should be broken by capes and bays of foliage, and outstanding single trees, and masses of shrubbery informally disposed. If the key-note here is solitude, retirement, the idea of escape from the frequented and a release from convention, nothing like formality or rectilinear primness should be permitted. This attempt to imitate the quiet of an unsettled neighborhood the English delight in producing in their great parks, through which one may drive for miles before reaching the castle with a refreshing sense of seclusion and unmolested nature. It is this idea which adds the final charm to the great Beeches, with their wide-stretched arms, and the Oaks which have remained undisturbed for centuries. They add significance and force to the idea of quiet permanence in an unvexed domain.

Where a place is so fortunate as to possess an attractive prospect from an elevation, everything in the foreground should be subordinated to this broad picture, and nothing should be placed so as to distract the attention. Strong forms of an occasional tree in the foreground may, by their sharp contrast with the dim and shimmering lines beyond, add depth and mystery to the distance, but there should be nothing trivial, nothing to prevent the eye from leaping straightway to the interesting point beyond, and, above all, nothing in the nature of clutter or trifling ornament near at hand. Where there is no important outlook, good landscape-effects can be compassed wherever there is room enough by availing one's self of slight undulations of the surface, increasing the height of the elevations and the depth of the depressions by planting, by adroitly managed shadows, and paths which vanish mysteriously behind a thicket. Where there is neither space nor view, a garden of rare and choice plants can be made the centre of interest, and, if these are not within the means of the proprietor, less costly flowers arranged with taste and skill may bring never-failing delight.

But, whatever the arrangement, there must always be some key-note, as in a painted canvas some high light contrasted with deep shadow, which will turn even a little garden into a picture. What is needed for this is the same kind of thought which a painter gives when he sits down before his canvas. No artist selects a subject without due consideration. There must be something in it—a tone, a shadow, a broad light—which makes the homeliest object artistic. The mental picture which the gardener frames it may take years to completely develop, but, so long as he keeps in mind this central note upon which the whole scheme is keyed, he can always work upon this

motif, and add such details from year to year as the growing picture itself suggests new combinations. Time spent in such study is time most delightfully spent, for ideas can be sought in every walk through the grassy path of a woodland; every neglected roadside contains its lesson; every river-bank along which he may drift affords a hint for new combinations, and the whole world becomes a sketch-book full of designs by the greatest of artists, which he may adopt and adapt without charge of plagiarism. Nature is bountiful in prospects, bountiful in material for making them. Supreme as she is, man is her ruler, and, without him, her highest charm lacks significance, since his is the eye to see, and, therefore, it is his right to subject her to his fancy, and he seldom has more delightful employment than in producing harmony between her munificence and his own artistic needs.

A broad avenue, several miles long, has just been graded through the most attractive residence section of Jersey City, and it is understood that the authorities are about to advertise for proposals to plant it with trees by contract. This is the ordinary process when tree-planting is done in almost every city of the country, and where the grade, as in this case, is often several feet below the surface of the ground, it is very plain that the hard-pan in which the trees must be set contains no food for their nourishment, and is not in a proper mechanical condition to receive the roots. It is often the case, too, that a street is built on an embankment filled in at the bottom with large stones, leaving air-spaces between them, above which is a layer of rubbish and then a layer of earth. Of course, no tree can be planted in such a position with any hope of health or longevity. There is no need to repeat here what has been so often said, that money which is expended in planting street-trees is worse than wasted unless the entire work is done with intelligence and skill. No sickly tree can be beautiful or useful, and trees which are not properly selected and properly planted in ground prepared by men who know how to perform every operation, are sure, in time, to offend the eye and depress the mind of every beholder. In sterile hard-pan an excavation twelve feet across and three feet deep, and filled with good loam, makes a fairly safe place to plant a tree in, provided enough loam is used, and it is allowed to remain at least one winter to settle and become firm before the tree is planted. Even then only a few kinds have any prospect of living when their leaves are exposed to a city's smoke and dust, and their roots are kept dry by excessive drainage. When the proper varieties are selected, nursery-grown trees with abundant roots, straight stems and heads pruned for the special purpose, should invariably be used.

Handsome trees will never be found in our cities until the work is placed in the hands of responsible and competent officers from the very beginning, whose duty it is not only to select the trees and plant them, but to supervise all pruning. Pruning is needed for the best development of any tree, but where uniform shape is desirable, where the natural low-branching form of many species is quite out of place, and where limited root-room often demands a corresponding reduction in the size of the top, as is the case with street-trees, careful pruning is an absolute necessity if even moderate success is to be attained. No tree is safe, however, when attacked by an axe or saw in ignorant hands. Unskillful pruning will not only destroy the beauty of a tree, but will leave raw wounds to invite attacks of fungi which bring disease and death. Even in the city of Washington, which contains more good trees than any city of the Union, it has been almost impossible to find expert pruners, and many rows of trees have suffered from improper cutting. Some trees, like the American Elm, resent the removal of any large branches, and, therefore, one of the characteristics of a good street-tree is that it will endure pruning well. This is one of the good qualities of the Oriental Plane-tree, and rows of these trees in Washington, which have been properly pruned once or twice, are a delight to the eye. Even the White Maple, which has many qualities that are not desirable, serves an admirable purpose when it has been properly cut in, as has been done in certain streets of the Capital.

One important factor in the maintenance of the street-trees in Washington is the nursery in which some eight acres of the varieties generally planted in the city are making a thrifty growth. Here young trees are properly pruned and trained and prepared for removal by transplanting, so that symmetrical specimens of uniform size are always to be had when they are needed. This is an improvement on the practice of paying contractors for pulling trees out of a swamp, or even of buying surplus nursery stock that has been left to take care of itself. The first step, however, to insist upon for the reform of street-planting in our cities is that the work from beginning to end should be placed in the charge of experts who know trees, who know how to plant them and how to care for them afterward.

Notes on the Forest Flora of Japan.—XXVII.

In few other countries are the forests of greater importance to the prosperity of the nation than they are in Japan. The formation of the islands, with their high central mountain-ranges and short, precipitous, swift-flowing rivers, make floods particularly prevalent and dangerous, and the necessity of preserving the forest-covering of the upper mountain-slopes proportionately great; and no other race, with the single exception, perhaps, of the people of the United States, is such a consumer of forest-products as the Japanese, all their houses and most of their articles of domestic use being entirely made of wood. The traveler, therefore, watches with some interest, as bearing upon the future of Japan, the condition and prospects of her forests.

According to the most reliable statistics available, those compiled by Rein, and based in part, at least, upon the report of the Japanese Forestry Exhibit at Edinburgh in 1834, thirty-seven per cent. of the three southern islands—that is, of the whole empire, with the exception of the practically unsettled island of Yezo—is desert or unproductive land. Twenty-three per cent. is occupied by the mountain-forests, eighteen per cent. by the cultivated forests, while rather less than twenty per cent. is devoted to agriculture, the remainder being taken up by buildings, roads, etc. The cultivated forests, in which it is presumed that the areas surrounding the temples are included, which, although covered with splendid groves of trees, are unproductive, except so far as they are made to furnish material for repairing or rebuilding the temples, are well stocked with coniferous trees—Retinosporas, Cryptomerias and Pines—and furnish all the building-material used in the empire. It is said that the Japanese have been making these plantations for twelve hundred years; and if this is true, they began planting trees for timber before any other people with whose agriculture we are acquainted. Scientific methods might, perhaps, make these plantations, which are mostly the property of individuals, rather more productive, but any great increase of forest-supplies can only follow the better management of the mountain-forests or the replanting of desert-lands. The mountain-forests may be roughly divided into two belts, the upper composed principally of Hemlocks, and extending about five thousand feet over the sea-level to the timber-line, and the lower stretching between two and five thousand feet elevation, and composed of Beeches, Oaks, Maples, Birches, Pines and a few Firs and Spruces. The upper belt, owing to its inaccessibility and the bad condition of the mountain-roads, is practically untouched, except where mining operations have created a local demand for timber. Scientific management and good roads would make this upper coniferous forest yield quantities of valuable material. The deciduous belt below it, which ought to be the most productive part of the Japanese forest, is, wherever we entered

it, in a deplorable condition, and although it is Government property, and Japan has supplied herself with a Forest Department, we saw no evidence that it is seriously occupying itself with the care of this part of its domain. There appear to be no rules about cutting the trees in this belt, which is invaded by bands of wood-choppers who cut without system any trees that appear large enough to answer their purpose; and the only mature trees it contains are those growing in inaccessible positions, or of sorts which are not considered valuable. No attention is paid to reproducing the valuable species, with the result, of course, that such species being the most cut have become the least common. Reproduction is chiefly by coppice-growth which is cut at irregular intervals; and the Japanese deciduous forests display all the bad effects of an indiscriminate and long-continued system of jardinage. The application of the block system would in time, of course, increase the output of these forests and supply large quantities of valuable timber where only fuel or small sticks are now produced.

Still better results might be expected from covering some parts of the desert land with forests. These so-called deserts consist of sandy sea-shore plains and dunes, often capable of producing a moderate growth of Pine; the alpine summits of mountains, their larva-covered slopes, bare mountain-ridges from which the forests have been artificially removed, and the Hara. This is the rolling foot-hill region about the base of the high mountains or below the mountain-forest belt, and must form a very large part of the thirty-seven per cent. of desert; it is covered with a mat of coarse bunch grass (Eulalia) and with many other perennial plants. Here the Japanese cut the fodder for their animals and cure their hay for winter use. Every spring the whole Hara is burnt over to destroy the dried vegetation of the previous year and start a new growth of grass. That fires have made these foot-hills treeless by the destruction of all seedling trees as fast as they appear seems to be shown in the fact that where ravines or other depressions occur among the hills, which the fire cannot easily reach, they are covered with a vigorous growth of trees of many species. It is not easy to find in existing conditions of Japanese life any cause for the original destruction of the foot-hill forests, but once destroyed it is easy to see why they have not been able to grow again. Much of the Hara region is suited in soil and elevation to produce Retinosporas and Cryptomerias, the most valuable of the Japanese timber-trees, and its conversion from unproductive prairie, for not one per cent. of the Hara is used for hay, into forest would add enormously to the wood product of the empire.

Japan is well situated geographically to supply a vast number of people living in foreign countries with timber; its soil and climate are pre-eminently suited to produce forests. It could easily send, if it had it to spare, coniferous timber to China, where the demand for building material is practically inexhaustible, to the Strait Settlements and Australia; and oak-staves for wine casks to California, which is now supplied from the fast vanishing forests of the Missisippi Valley.

From the changed conditions which have followed the hasty and often ill-considered introduction of European methods into Japan grave economic questions are rising. The cessation of civil wars which followed the abolition of the Shogunate and the deposition of the Dyamos, and the introduction of western medical practices, have caused a great increase of population in the last twenty years, and the question of food-supply is becoming a vital one to Japan. The limit to the production of rice, the one great staple, has been practically reached, and all efforts to induce the superfluous population of the southern islands to colonize Yezo have utterly failed, in spite of the great sums of money spent by the general government during the last twenty-five years to encourage its settlement. A few thousand coolies leave home annually to work in other countries, but this movement is comparatively small, and many of these emigrants return to their homes at the end of a few years. Starvation threatens Japan unless it can import food from other countries, and this it will only be able to do by increasing its exports. There is still room to increase the product of tea if the demand in this country for low grades of Japanese tea justifies it, but the ground fit to grow Mulberry-trees advantageously is practically all taken up, and the silk-product cannot therefore be very materially increased. Curios, of course, can be made in unlimited quantities, but the demand for them in the United States and Europe is more likely to decrease than to increase; and wood is really the only product upon which Japan can depend to greatly increase the volume of her exports. The care of her existing forests and the planting of her waste lands would give employment to thousands of coolies, and in time would add important sums to the national exchequer.

The forests of Yezo are still intact, except where here and there a struggling settlement has broken into the forest-blanket which covers this noble island. Here are great stores of oak and ash of the best quality, of cercidiphyllum, walnut, fir, acanthopanax, cherry and birch—a store-house of forest wealth, which, if properly managed, could be drawn upon for all time, and which, if the timber is not needed in Japan, may become, when the trans-Asiatic railroad is finished, an important factor in the development of southern Siberia and some of the treeless countries of central Asia. *C. S. S.*

Foreign Correspondence.

London Letter.

XANTHORRHÆA QUADRANGULATA.—One of the most interesting plants in flower at the present time at Kew is a specimen of this, one of the Black Boys, or Grass-gum-trees, of Australia. It has a charred trunk, five feet high and nine inches in diameter, bearing a crown of elegant Rush-like leaves a yard long, from the centre of which rises an erect stout spike, not unlike a Bullrush (Typha), but with a green, instead of brown, head of flowers. Smaller plants of it are more elegant and ornamental than the narrowest-leaved Cordylines, and they grow freely here under ordinary greenhouse treatment. There is a figure of X. quadrangulata in the *Botanical Magazine*, t. 6075 (1874), where Sir Joseph Hooker states that "the Grass-gum-trees are among the most remarkable vegetable features of that country of wonderful vegetable forms, Australia. . . . About fifteen species have been discovered, of which X. hastilis, of New South Wales, is the best known, from the uses of its long flower-spikes, which attain twenty feet in height, as spear-shafts, and for the rich red-brown astringent resin which forms between the densely compacted bases of the leaves, and which has been used as a substitute for gum-kino. It is often called the Black Boy, and a native boy with a tuft of grass on his head, placed among a group of them, is, from a little distance, with difficulty distinguished from the surrounding trunks. Another species, X. pecoris (=X. Preissii), of west Australia, forms a staple fodder for cattle during a good part of the year." There was a considerable quantity of red transparent resin on the stems of X. quadrangulata when they arrived at Kew last year. There are good examples of X. hastilis, X. Preissii, X. australis and X. gracilis in cultivation at Kew.

HARDY BAMBOOS.—The growth made by these plants at Kew this year has been astonishing, and the healthy green of their elegant foliage is a novel feature among hardy plants in November. It is true that we have not had more than six degrees of frost here so far, and this amount of cold has not appreciably affected any of the Bamboos. Altogether there are about forty distinct sorts of Bamboos in the outdoor collection at Kew. These, with very few exceptions, are all Japanese, the exceptions being Arundinaria falcata, A. Khasyama and Thamnocalamus Falconeri, all from the mountains of northern India, and Arundinaria

macrosperma, from North America. Nothing at Kew lately has attracted more attention from earnest horticulturists than this collection of hardy Bamboos. They are certain to become universal favorites, especially in the warmer parts of this country, where even the tenderest, T. Falconeri, is perfectly hardy. The chief difficulty at present is the names, which are in much confusion, owing partly to carelessness or something worse on the part of dealers, but chiefly to the difficulty of distinguishing many of them until they flower. Mr. W. J. Bean, of the Kew Arboretum, has prepared an excellent paper on the Kew collection, which he read a few days ago before the Kew Society, and which, when published, will help to elucidate matters relating to the nomenclature, cultivation and usefulness of hardy Bamboos.

Arundinaria macrosperma and A. tecta.—Will some one who knows tell us something about these two Bamboos, which are said to be common in some parts of the United States, but which are scarcely known in English gardens? There is a small tuft of A. macrosperma at Kew, and this is probably the only representative of North American Bamboos in this country. Information respecting the character, behavior under cultivation and hardiness of your native Bamboos, and also the sources whence plants can be obtained, will be appreciated by all who are interested in Bamboos here.

Guevina Avellana, the Chilian Nut, is a plant that horticulturists in the southern United States are likely to be interested in. It has been in cultivation in England since 1878, when Mr. W. Ball introduced and distributed it. In 1884 a figure of it was published in the *Gardeners' Chronicle*, prepared from a plant grown in the open air in Cornwall, and a few days ago a correspondent sent a specimen of it to Kew, which had been taken from the plant then figured. It forms a handsome evergreen bush or small tree, with pinnate or bipinnate leaves, glossy, with rust-colored hairs on the leaf-stalks and stems, the general appearance of the plant being that of the tropical genus Rhopala, as represented in our stoves. In Gay's *Flora Chilensis* it is said to be common in south Chili, where its nuts, known as Avellans, are much esteemed. They are also collected and sent to Peru and other places in South America. The flowers, which are borne in axillary racemes, are half an inch wide, white or rose colored, and the drupe-like fruits, which hang for a very long time, are at first green, changing to violet or black when ripe. The nuts are said to resemble Filberts, Corylus Avellana, hence the name Avellans, and to be of very good flavor, with slightly astringent properties. In Chili this plant forms a tree thirty feet high.

Guevina is a monotypic genus of Proteaceæ and is closely related to Rhopala. It is found wild only in Chili. I have seen it cultivated in gardens here under the name of Quadria heterophylla. If not already introduced into Florida, California and other warm portions of the United States, it is worth the experiment. If not of any value as a fruit-tree, it has considerable claims as an ornamental tree for the garden, its large rich green, glossy evergreen leaves being decidedly handsome.

Crocosmia aurea.—Perhaps American cultivators of this plant know of the improved varieties now grown in England. The type is well known as a useful plant for the border or for cultivation in pots, growing and flowering freely under ordinary treatment, and in gardens where the winter temperature is not too severe becoming almost a weed if planted in a sunny border. There are, however, at least two varieties which are immensely superior to it, the one called Maculata having flowers fully three inches across, with broad overlapping segments of deep orange-yellow color, blotched at the base with dark brown; the other is known as Imperialis, and I now learn that this was raised by Herr Max Leichtlin at Baden-Baden, where it was first distributed under the name of Macrantha in 1888. This has flowers even larger than those of Maculata, and like it in substance and color, differing only in the absence of spots. Both varieties grow to a height of three feet, and flower freely and continuously all the summer. A third variety, grown at Kew as Imperialis, is evidently distinct from the true plant of that name, the flowers, although as large, having narrower segments, colored clear yellow. This might be well called Citrina. It is quite as tall as the other two and as free-flowering. There are no plants of the Tritonia section of Iridaceæ more useful for producing brilliant colors out-of-doors in summer than these Crocosmias. Of course, the hybrids between C. aurea and Tritonia (Montbretia) Pottsii, obtained by Monsieur Lemoine, have a similar value as border-plants.

A Cactus Society.—Mr. Henry Cannell is making exertions to promote an interest in Cacti among English horticulturists, and, with a view to showing how much has been done, he proposes to get up an exhibition, if possible, under the auspices of the Royal Horticultural Society, in August next, and, if possible, form a Cactus Society. Mr. Cannell is the only English nurseryman, so far as I know, who possesses a collection of Cacti and other succulents. It is somewhat remarkable that in this country, where horticultural taste is both comprehensive and diversified, there is so little interest shown in Cactaceous plants. They are not wanting in floral beauty, and for structural and other peculiarities they have no equal among the families of plants which find favor in gardens. I believe there are hundreds of horticulturists who would grow these plants if they knew them better. I hope they meet with higher appreciation in America.

Cypripedium Southgatense superbum is a new hybrid of more than ordinary merit. It is from C. bellatulum, crossed with C. Harrisianum, and it combines in a pleasing manner the characteristics of both, the plant being dwarf, with sturdy leaves and large flowers on short scapes; the dorsal sepal is broad, flat, with brown longitudinal stripes on a dull crimson ground; the petals are of the same color, but spotted instead of striped, and the pouch is crimson, becoming paler toward the apex. The plant was exhibited a fortnight ago by Mr. T. Statter and obtained a first-class certificate.

Cypripedium Minos.—This is another new Veitchian hybrid, the result of crossing C. Spicerianum with C. Fairieanum. It has the drooping petals characteristic of the last-named species, a large white dorsal sepal marked with red-purple at the base, and a pouch shaped like that of C. Spicerianum and colored dull yellow, shaded with brown. It obtained an award of merit this week.

Cypripedium Fairieanum × Lawrencianum, is a new hybrid between the two species denoted by the name. It was shown in flower a fortnight ago by Mr. T. Statter, of Manchester, and was awarded a certificate by the Royal Horticultural Society. The flowers are as large as those of an ordinary C. Lawrencianum; the dorsal sepal is green below, white above, lined and veined with claret-purple; the petals are drooping, green, with purple lines and spots, and tufts of hairs on the wavy margins; the lip is dull purple tinged with green. It is worthy of note that every hybrid of which C. Fairieanum is one of the parents has attractive characters. C. Fairieanum is perhaps the rarest of all species in cultivation. It was introduced in 1857 from Assam, and has never been found wild since. Meanwhile, the breeders of hybrids have made much use of it, but, so far as I know, only as a male parent, and we have no hybrid of which C. Fairieanum is the mother. It would pay to fertilize this species with its own pollen and raise a batch of seedlings of it.

Lælia anceps var. Amesiana.—This beautiful variety of one of the best of all Cattleyoid Orchids was shown last week by Mr. Statter, and was awarded a first-class certificate. It is not a new plant, as some of the papers have inferred, having been described by Messrs. F. Sander & Co. in 1888 from a plant flowered in their collection. It has white sepals and petals, tinged at the tips with violet; the sepals are nearly as broad as in the variety Dawsoni, and

the lip is rich violet-crimson in front, tinged with yellow inside.

LÆLIO-CATTLEYA STATTERIANA.—A new hybrid between Lælia Perrini and Cattleya labiata was shown under this name a fortnight ago by Messrs. J. Veitch & Sons, and was awarded a first-class certificate. It has large handsome flowers with pale rose-purple sepals and petals, the latter broad and flat, and a lip colored rich maroon, with a white throat. It is distinct, and apparently a free grower.

London. *W. Watson.*

Fig. 77.—Washingtonia filifera in a California Garden.

New or Little-known Plants.

Washingtonia filifera.

THE garden scene which appears in our illustration on this page, and in which a young plant of the noble Palm of the Colorado desert, Washingtonia filifera, is the principal figure, conveys more clearly than could be expressed in words an idea of the vastness of the territory embraced within the limits of the United States, the variety and richness of its vegetation and the possibilities of diverse and distinct styles of gardening which it presents. The Pines and Birches of Maine and the Appalachian Rhododendrons and Azaleas, the great Cacti of Arizona and the Desert Palms seem as far remote from each other in character as if they were inhabitants of different hemispheres; and yet they all come within our flora and must find a place in every garden in which the attempt is made to display the chief types of the vegetation of the United States.

Washingtonia filifera is a member of a small group of Palms scattered over the desert region of the extreme south-west part of the United States and the adjacent portions of Mexico. The species are not represented by many individuals, and the isolated groups of venerable trees seem to indicate that they are the last survivors of a race which has been gradually disappearing under the hardships and dangers of an existence in the desert. Fortunately, however, these Desert Palms show an unusual power of adapting themselves to new conditions of life, and, transplanted into the gardens of California and of the countries which surround the Mediterranean, they grow with a vigor and assume a beauty which they never display in the rocky and sun-baked valleys which are their homes. It is probable,

therefore, that this species will not disappear, and that the Palms which the Jesuit missionaries saw as they traveled from the City of Mexico to the region which they called Upper California, and cultivated about their mission houses, will continue to embellish the gardens of California, of Provence, Algeria and Egypt long centuries after the original stock has disappeared forever from the desert of the south-west.

Cultural Department.

Dropsy of Violets.

A NEW trouble of Violets has come to me for determination from plants grown in forcing-houses in the vicinity of Spring Valley, New York. The trouble is due to a dropsical swelling of the parenchyma of the leaves at definite points situated upon the smaller anastomosing veinlets. It usually occurs on the under side of the leaf, but sometimes the swelling occurs also on the upper side. Rarely does it occur on the larger veins. The swellings appear as small warts of a variable size, which can usually be determined as such with the unaided eye. At the same time the leaf changes from its normal color, and frequently becomes bluish or purplish, this color extending over quite large areas. This color may not be present in all cases, but was so in all the specimens which came to my hand. Parts of the leaf also become yellowish. Transsections of the leaf show that these swellings do not consist of a hypertrophied tissue in the usual sense of that term, for there is no increase of the number of cells. The wart is entirely due to an elongation of the cells concerned. At length, some of the elongated cells become ruptured because their thin walls can no longer stand the strain. This permits the rapid drying of the cells of the wart, and in turn also aids the desiccation of the adjacent tissues. This gradual desiccation of parts of the leaf, together with the partial loss of the physiological functions of this member, finally results in the death of the entire leaf, which then withers and falls. One owner lost all his plants in two houses by this trouble, or, more properly speaking, all of his plants in two houses lost their leaves.

Dropsical diseases of plants have only recently attracted attention in America, the first notice being by the writer, who made quite an extended study of the trouble developed on Tomato-plants in the forcing-house. The result of this study was published in Bulletin No. 53, Cornell University Experiment Station (*Œdema of the Tomato*), May, 1893. It was found that the trouble was induced by the excess of root absorption over transpiration. By this unequal operation of these two laws of plant physiology the succulent tissues of the plant become charged with more water than the plant can take care of either by growth or transpiration, or by both processes together. The result is that certain of the cells become stretched, their walls becoming thinner thereby, until they are no longer strong enough to hold the form of the cell intact, when it ruptures. Certain conditions of the forcing-house, as well as the season of the year when such houses are most frequently brought into requisition, favor the lack of harmony between these two processes in the plant. The temperature of the soil is likely to be very near that of the air, or, at least, not far below it, so that root-activity is almost constant. The confined air of the forcing-house, the obstructed light, and especially the short days in winter, compared with the long days of the summer season, greatly lessen transpiration. The injury can probably be prevented, or at least lessened, by selecting well-lighted parts of the house for the plants, by preventing an excess of water in the soil, and by obtaining a temperature of the air considerably higher than that of the soil.

Cornell University. *George F. Atkinson.*

Early Cauliflower.

EARLY vegetables are always appreciated, and there is little difficulty in having Cauliflower as early as the first week in April without elaborate preparation or appliances. The delicate flavor of Cauliflower at this time of the year is not equaled at any other season, excepting, perhaps, late in autumn. During hot weather the flavor is usually strong, so that it is advisable to make an effort to have this vegetable when at its best. There are many strains of Cauliflower now that are all equally good when obtained from reliable seedsmen, but preference should be given to the dwarf-growing kinds for early crops, as they take up less space and produce nice heads to each plant, with not more than five per cent. of failure to head up. The first sowing should be made in the greenhouse on the first of January, and as soon as the seeds are germinating they must be placed close up to the glass in a house kept at about fifty degrees at night. By the last of the month these will be ready to pot up singly in two-inch pots, and a second pinch of seed should then be sowed; in three weeks the earliest will be ready to put in four-inch pots, and the last sown ready to pot off, and by the tenth of March the largest may be put into six-inch pots, as their growth is very rapid at this season. About this time we begin to get the cold frames empty, to fill again as hot-beds; many of the Violets may be spared, and other winter occupants, such as bulbous plants and Roses, will all have been taken into the greenhouse, so that considerable space is available. The hot-beds are generally finished and ready for planting by the 20th of March, and a warm day is chosen to move the Cauliflower from the greenhouse to the frames, and they are taken out of the pots and planted. A good watering with tepid water is given at the time, as drought at any period is liable to make them head up prematurely. In preparing the hot-beds, two feet of fermenting material is sufficient; half of this is composed of leaves that have been placed round the cold-frames in winter, so that one load of manure goes a long way, and the heat being less violent it consequently lasts longer when the leaves are mixed in.

About six or eight inches of loam is used to plant in, and if the material of a spent Mushroom-bed is available there is nothing better than this for mixing with the loam, for it not only lightens up the soil and makes it porous, but very often another crop of Mushrooms will appear in a few weeks after planting in Cauliflower, the fermenting material giving the spawn a stimulus that will start it again into activity. The second and third sowings of Cauliflower are potted and treated like the first, except that they are planted in frames out of four-inch pots, the principal point being to take care that the young plants never receive a check, from want of room or water. Later sowings are made at intervals of three weeks, for the home table demands not so much a large supply as a regular one until the outdoor crops begin to mature. These later sowings are planted in the open ground and protected, if cold nights prevail, as they sometimes do, even late in May, in this section.

It is pretty well known, but will bear repetition, that the Cauliflower will repay any extra attention, and is one of the few vegetables that quickly respond to watering with fertilizers even in the open ground. This was evident last autumn, when a large patch of the plants were at a standstill owing to dry weather, and it was extremely doubtful whether they would head before frost came. Nevertheless a good soaking of weak manure-water brought them along rapidly, and scarcely one failed, as the later ones were taken up and the roots laid in a trench with the heads close together, and at night straw was thrown over them to protect them from frost. For earliest sowings we use Early Dwarf Erfurt pot-grown seed; for the later sowings, Snowball, Danish and Krouk's Perfection are good varieties.

South Lancaster, Mass. *E. O. Orpet.*

Winter-flowering Greenhouse Plants.

AMONG the many good winter-blooming plants few make so effective a display as Reinwardtia tetragyna and R. trigyna, shrubby members of the Flax family from the East Indies, and for a long time known under the generic title of Linum. The flowers are widely campanulate, yellow, and appear in December. They are particularly valuable on account of the scarcity of these colors at this season. Propagation is from seeds or cuttings, and young plants are planted out for the summer and lifted in the autumn.

Few winter-blooming Cape bulbs are so useful as the Lachenalias. As their culture is easy, and their multiplication comparatively rapid, it is a wonder they are not more generally grown. The kinds most common are varieties, or hybrid forms, of L. tricolor. The flowers of L. Nelsoni are golden yellow, campanulate, pendulous, arranged in long racemes, and last a long time in perfection. Their cultivation consists in starting the bulbs, five in a six-inch pot, in October, and growing them in a cool-house, with plenty of light. They need an abundance of water, but the drainage must be good. After the blooming season, good light, air and water must still be afforded the plants. These conditions should be continued until the leaves commence to turn yellow and show signs of the approach of the resting period, when they may have less and less water, until finally dried off, when they should be put away in a cool dry place until the following October. In shaking the bulbs out, preparatory to repotting, it will be found

they have increased four to five fold, many of the new bulbs being large enough to bloom during the current season. The smaller ones can be planted rather strictly in boxes, the majority of them making very fair bulbs in one season.

Primula Forbesii is a recent addition to the few winter-blooming species, and comes from the Celestial Empire. The plant forms a somewhat dense tuft of oblong, coarsely crenate foliage, more or less covered with silky hairs, from which are thrown up numerous slender scapes, bearing each several whorls of delicate rose-colored flowers, quite fragrant, and about half an inch in diameter, with a yellow centre. It is a continuous bloomer, having been in flower here since last July, and may be increased either by seeds or division. P. floribunda, from the Himalayas, is another tufted, winter-flowering species which is not as well known as it should be. The numerous dense whorls of small yellow flowers are produced in such abundance as to be quite effective, especially at this season of the year. It may be easily raised, either by seeds or division.

Streptosolon Jamesoni is a handsome greenhouse evergreen, with orange-colored flowers, borne in loose panicles at the ends of the branches. It is more or less in bloom during the entire winter. In shape the flowers resemble a small Petunia-bloom, to which family it belongs. The cultivation is quite easy. Cuttings taken in spring should be grown on continuously in pots, and these form nice specimens by autumn. This plan is preferable to planting out, for, as they grow enormously large, it is difficult to take them up and establish them in pots. Plants held over two years may be trained into neat standards, and when in bloom the branches hang in a perfect umbrella form.

Christmas Roses, Helleborus niger, force nicely for decoration at this season. It is customary to import roots, as their successful culture here has proved difficult. Intending importers should bear in mind that if these are received later than November they are apt to have commenced growth in the hold of the vessel, and this renders them useless as decorative plants for the first season.

We find Brompton Stocks very serviceable for winter-blooming pot-plants. They are preferable to the East Lothian, which, being hardier, do not force so well. Another advantage is, they generally bloom on the leading shoot early in summer, and if the flowers are of the desired color the shoot is cut out and the plant, which afterward makes good bushy growth, is marked for lifting later on.

Abutilon Eclipse is one of the best additions to this very ornamental family of greenhouse evergreens during recent years. It is of dwarf bushy habit, with handsomely variegated foliage. The flowers are comparatively large, deep orange-yellow, pendulous, and borne in great profusion during the whole season. It is evidently a hybrid form of A. megapotamicum, and is also a very handsome bedding-plant. Among the few Ericas which can be grown with any degree of success in this country are E. melanthera and E. Caffra. These make neat bushy specimens and bear small flowers in great profusion, the former with short open corollas and black protruding anthers, the latter with white globular flowers. They are of very easy culture, and do well planted outdoors in summer.

Libonia Penrhoensis has proved to be one of the most useful small decorative plants we have grown. Cuttings strike very readily in spring, and may be planted out for summer. When lifted in the autumn they are about one foot in diameter, and perfectly hemispherical. With an abundance of neat, shining, dark foliage, they are effective at any time, but particularly when clothed with a profusion of orange-colored flowers.

Begonias, as usual, occupy a prominent place, and none have given us so much satisfaction as B. Bismarcki. This is a very robust shrubby variety, doing equally well out-of-doors in the full sun in summer-time. It is a perpetual bloomer, bearing large panicles of lovely rose-colored flowers. B. gogaensis, a rhizomatous species from Sumatra, with handsome foliage and delicate panicles of white. These and the many varieties of B. semperflorens make a very useful list.

Wellesley, Mass. *T. D. Hatfield.*

Asparagus retrofractus arboreus.—This is a distinct form of this useful plant, and its habit of growth is unique and quite dissimilar to the ordinary forms of greenhouse Asparagus. As implied by the varietal name, it is tree-like in habit. The firm, ivory stems are upright and much branched, with many ramifications, and are well furnished with numerous puffs of bright green foliage, which is light-colored in the young stage. My plant has shown no tendency to climb, but simply forms these beautiful light masses of foliage which are very useful for bouquets—in many cases more useful than pieces of the flat A. plumosus. I have not yet tested this plant for its keeping qualities when cut. Asparagus has of recent years taken a foremost place among greenhouse foliage-plants for its ornamental growth and for sprays for cutting, which arrange well with cut flowers, and are the most lasting of any foliage for this purpose. The best and hardest grown Fern has, when cut, a very limited life in comparison with Asparagus. For nice decorations, A. plumosus seems to have put the popular Smilax quite in a secondary place, its lengths of lace-like leaves being extremely graceful and delicate. A. tenuissimus is more cloud-like in effect and lighter in color. These plants are indispensable in the smallest collections of plants, and the new variety, to which attention is called, is evidently a gain.

Stevia odorata.—This is the name of a recent introduction, which does not seem an improvement on the ordinary Stevia (S. serrata) of the greenhouse. The strongly fragrant white flowers are double, and produced very freely in flat, rather close, corymbs. It can be readily grown from seed, but greenhouse space can be more profitably used for the single Stevia, whose light sprays are so useful at this season either alone or in compositions with other flowers.

Iris stylosa.—The beautiful flowers of this plant are now nestling in the grass-like foliage. The type of this Iris is purple, but there is also an albino form. This species is hardy, but it is not a satisfactory plant unless grown under cover, as it does not seem to flower under adverse conditions, as do some of the bulbous Irises. Some of these are already making growth, and will early in the year expand their flowers at the first opportunity of moderate weather. In my trials of I. stylosa in the open I have found it to simply remain dormant during the winter and to have its foliage badly cut, but not otherwise injured. The particular plant, now the first of the varieties to flower, wintered out last year safely during a specially hard season.

The Lælias.—The experts do not seem to write much about these Orchids, presumably because they are rather common things and do their own growing, or, in other words, are so little trouble as to be quite uninteresting. As with my moderate cultural skill, these plants flower successfully at their proper season, I am led to call attention to them as satisfactory plants of easiest cultivation, while they may be obtained at a very low price. L. autumnalis Arnoldiana has just furnished me with strong spikes of large flowers, red, shading to white, with an agreeable vanilla-like fragrance. L. albida, the little white-flowered form, is just coming into flower, and is a thrifty kind always, making numerous new pseudo-bulbs and consequent spikes of flowers. These are both lasting flowers, and a plant in a living-room, if well attended to as to moisture, will remain in good form for a long time. There is no disguising the fact that one's friends express more gratification at a gift of a few Orchid-flowers than of any other kind one can offer, and the plants seem to them a never-failing source of interest, though the ordinary visitor has very shadowy ideas as to what an Orchid really is. The cultivation of at least a few Orchids should be undertaken even in the smallest house, as they inevitably interest the grower's friends and visitors as well as himself. Even the commonest kinds, which can be bought very cheaply, are quite as pretty as some of the most expensive, and these are really rare in the sense of not being plentiful as other flowers, and are still practically unknown to the general public.

Elizabeth, N. J. *J. N. Gerard.*

Correspondence.

Japanese Morning-glories.

To the Editor of GARDEN AND FOREST:

Sir,—During the past two years a Japanese student at the University here has been cultivating on the college farm some Morning-glories from seed sent to him from Japan. These plants have interested all who see them. They are more vigorous growers than our common Morning-glory, and have larger stems and leaves. Both leaves and stem are quite hairy, and the former were usually palmately three-cleft. Often the leaves were nearly as large as those of the Moon-flower. The seed-pods are usually three-celled, with two seeds in a cell. What makes the plants particularly interesting is the variety of color in the flowers. The range of shades and markings is most striking, varying from the blossom of solid color to one of three or four colors. The delicacy of coloring also notably surpasses that of the American species. I give brief descriptions of a few of the most distinct flowers. (1) A

delicate pale-blue corolla, with a pink centre, diameter about three inches. (2) Corolla, white, with the faintest blue tint, like some forms of white iron-stone china, and covered with deep blue spots as large or larger than a pin-head; diameter of flower about two and a half inches. (3) Corolla, deep purple, with a lighter purple shading on the margin of each petal, with pink centre, the line of demarkation between the two purple colors being most distinct; diameter about two and a half inches. (4) Corolla, light purple, with pink centre; diameter about three inches. (5) A very large light blue flower, edged with an incurved line of white, the white line having a depth of about one-fourth of an inch at its widest point. (6) Color, a peculiar shade of brilliant red, quite unlike any other shade of Morning-glory that I have ever seen; diameter two and a half inches.

These Japanese Morning-glories are in every particular as vigorous as the common one, though they perhaps do not flower quite so freely, and make a charming variety when clambering over a trellis.

Purdue University, Lafayette, Ind. *C. S. Plumb.*

[The Morning-glory is one of the eight plants whose flowers the Japanese chiefly value, the others being the Apricot (Mume), the Cherry, the Wistaria, the Pæony, the Iris, the Lotus and the Chrysanthemum. The species most generally cultivated is Ipomœa triloba, a native of China, which blooms in Tōkyō at midsummer. The plants are grown in small pots, and neatly trained around bamboo stakes about three feet long, three or four flowers only being produced on a plant at one time. In all the little nursery-gardens in the suburbs of Tōkyō and of the other large cities collections of the plants are grown and offered for sale, thousands being disposed of every year in Tōkyō alone. Amateurs, too, devote a good deal of attention to the cultivation of these plants, and pay large prices for certain fashionable forms with peculiarly marked or abnormally formed flowers, in which the Japanese delight, although to less carefully educated eyes they may appear simple abominations. The city of Osaka is said to contain the best private collections. We have seen a Japanese book in which hundreds of named varieties are described and illustrated by colored drawings. At Iriya, in Shitaya, a suburb of Tōkyō, every summer the gardeners make a display of Morning-glories, which they use as they do Chrysanthemums in the autumn in decorating with growing plants life-size human figures placed on revolving stages. Every morning thousands of persons visit this exhibition, which is, perhaps, the most curious midsummer spectacle that can be seen in the capital, but, as the flowers close soon after sunrise, a person living at one of the foreign hotels has to be up by 2 A.M. in order to reach the gardens in time to see them at their best, so that comparatively few foreigners, unless they happen to be enthusiastic horticulturists, ever visit it.—Ed.]

Roses in Washington.

To the Editor of Garden and Forest:

Sir,—Perhaps the largest establishment in the country where Roses are grown for cut flowers is that of Messrs. C. Strauss & Co., situated on the Blademburg Road, two and a half miles from the Capitol in Washington. Here are forty-four houses, ranging from 115 to 320 feet long, making altogether more than five acres under glass. While the principal business here is the sale of cut roses, a large trade in plants, especially in Rose-plants, is done in the spring, and there are thirty-two acres of land connected with the houses in which Gladiolus, Tuberose, Cosmos, Roses and other flowers are grown for sale during the summer. The demands of the home market alone do not suffice to keep a business like this running at high pressure, and, as a matter of fact, flowers are shipped to wholesale dealers in all parts of the country. Not many are sent to the vicinity of New York, Philadelphia or Boston, which are themselves large centres of supply, but to Cincinnati, St. Louis, Chicago and St. Paul, in the west, as far as to Maine, in the north, and to Charleston, Savannah, St. Augustine and nearly all the cities of the south large shipments are constantly made, mostly of roses; but there is room enough for a matter of 50,000 Carnation-plants here, and the benches on which they are planted are fringed with Pansies and other plants. Two thousand Sweet Peas are preparing to bloom, and in different houses there are Palms, Ferns, Dracænas, Pandanus Veitchii and Rubber-plants in sufficient quantity to stock a considerable business in this line alone.

At a recent visit to Washington I was conducted through the establishment by Mr. Hugh A. Kane, one of the firm, and found acre after acre of plants all in the vigor of perfect health, and with the added beauty which always comes from perfect cleanliness and careful arrangement. Of the Roses grown for cut flowers the so-called white form of La France takes the lead in number of plants, there being some 20,000 of these now in the beds. The flower, as is well known, is not white, although lighter than the La France, but it has the same silvery sheen and the same fragrance, and for all purposes it seems better than the type. It is a stronger grower, yields better and the flowers last longer. In the autumn chrysanthemums seem to have the preference over all other flowers, so that roses are in light demand at that season; on the other hand, May, and even June, are excellent months for rose-sales, and therefore the plants are set out later than they are in some places, but just in time to have their first heavy crop about Christmas, although they are now yielding well. They were put in the house about the 1st of July, and have been blossoming since October, and will continue to bloom on till August. The method of cultivation pursued here does not differ substantially from that generally practiced elsewhere, although in the selection of varieties no Hybrid Perpetuals are grown. Experiments, however, are always in progress for the purpose of testing new plants and new processes. In one long house, where the centre stage had been removed for repairs, a solid bed of Kaiserin Augusta Victoria had been planted on the ground. For half the length of the house two-year old plants, which had been lifted from the bench at the close of the cutting season in August, were planted in soil without any bottom-heat, while in the other half young plants, which were started late in May, were planted in the same way, except that steam-pipes were running through the drainage. Flowers of immense size were growing on strong stems, and vigorous shoots were starting up from the ground among the old plants. In the other half of the bed the young plants were making a wonderful growth, and seemed altogether superior to some other plants of the same age on a side bed which were not treated in this way. Altogether, this planting on the ground with bottom-heat looked like an improvement on the old methods. Of course, experiments are constantly made with new Roses, and something like a hundred varieties have been imported during this year, and are now under trial. The great bulk of the sales, however, are from half a dozen kinds, the leading variety being the white La France, followed in order by Catherine Mermet, Perle des Jardins, the Bride, which will probably be superseded entirely by Kaiserin Augusta Victoria, American Beauty, American Belle and Souvenir de Wootton.

In examining the construction of the houses, it is noteworthy that the newer ones are all built with roofs high above the stages, and instead of having the plants close to the glass, abundant light is secured by using a very clear quality of glass twenty-four inches wide and double-thick. As a matter of course, all the improved appliances for giving a free circulation of air are in use here. In one place I noted five houses, each 112 feet long and 18 feet wide, standing alongside of each other, with no walls between them, so that they altogether made practically a single apartment. The benches, which were here filled with Carnations, stood something like five feet above the ground, although, of course, the slatted walk between them was raised to a convenient height for working in them. This gave a great body of air below the benches as well as above the plants, so that the house never cools off rapidly when the temperature drops suddenly. In fact, steam had been turned on in only a few of the pipes in every other house so far this season. Certainly Carnations never looked better than they did in this cluster of houses. The white varieties grown here chiefly are Lizzie McGowan and Mrs. Fisher; Grace Wilder is the preferred pink, while Lady Emma and Portia are the principal scarlet kinds. Considerable quantities are growing on trial of Daybreak, Edna Craig, Grace Battles, Thomas Cartlidge, Nancy Hanks, Ruth Cleveland and the very dark Anna Webb.

To furnish warmth for this great space there are two batteries near each other, one consisting of eight No. 8 Furman boilers, and the other of four forty-section Exeter boilers. These are so connected and adjusted that any one of them can be run alone, or any two or three or four of them together, so that as many of them as are needed, and any particular ones that are desired, can be used as required. The return pipes from all the houses come and empty the condensed steam into one delivery pipe connected directly with the

boilers, although some of these houses are at least five hundred feet away. No one can make even a casual inspection of this establishment without being impressed with the simplicity, effectiveness and economy in production with uniformity and excellence of product, which are secured by thorough organization and system in the conduct of a business of this magnitude.

New York. S.

Recent Publications.

Letters of Asa Gray. Edited by Jane Loring Gray. Two volumes. Houghton, Mifflin & Co., Boston and New York. 1893.

These volumes show much of the life and character of an interesting and most distinguished American of strong personality and very considerable achievement, and incidentally contain a large amount of information with regard to the personal traits of the principal botanists of the past generation, with whom the author of these letters maintained a long and active correspondence. The letters themselves, to which a short autobiographical sketch is added, are allowed to tell the story of Dr. Gray's life, the editor wisely restricting her labors to supplementing them with such explanatory notes and brief paragraphs as were necessary to make the narrative clear.

Asa Gray was born on November 18th, 1810, in Sauquoit, a hamlet in Oneida County, in this state. His father was a farmer, great-grandson of John Gray, who emigrated with a colony of Presbyterians from Londonderry, in Ireland, to Boston, Massachusetts, in 1718, and established himself in Worcester, in that state. Moses Wiley Gray, the grandson of John Gray and the grandfather of the future botanist, moved to Oneida County in 1794, settling in Sauquoit. His son, Moses Gray, married, in 1809, Roxana Howard, of a Massachusetts family, and shortly after the birth of his eldest son, Asa, moved to Paris Furnace, where he established a small tannery. Here Asa Gray, when only four years old, performed his first labor, which consisted in riding round the ring the horse which turned the bark-mill, and here he received his first schooling in the district school, where he early attracted attention for his proficiency in spelling, for which he won a number of medals. The brightness of the boy and his fondness for books induced his father to send him to the Clinton Grammar School, where he learned the rudiments of Latin and Greek, and then to the Fairfield Academy, in Herkimer County, which he entered at the age of fifteen. It was intended that he should go to college, but instead he began, in 1826, the study of medicine in Fairfield Academy, and was fortunate in securing the friendship of Professor James Hadley, who became his earliest scientific adviser. Two years later saw the dawn of his interest in botany and his first collection of plants made during his drives about the country with his principal, Dr. Trowbridge, of Bridgeport, whom he assisted during that part of the year when the medical school was not in session. About this time, at the suggestion of Professor Hadley, Dr. Gray opened a correspondence with Dr. Lewis C. Peck, of Albany, who was then the principal botanist of northern New York, and not much later he sent some rare plants to Dr. John Torrey. This was the first step in an intimacy which made Gray, whose first taste had been for geology, a botanist, and which lasted, without interruption, until the death of the elder of the two friends.

We have dwelt at some length upon the early life and training of Asa Gray because in view of his scanty opportunities his future achievements and distinction are remarkable. The great naturalists of his generation with whom we most often associate the name of Asa Gray, Darwin, the second Candolle, the younger Hooker, Bentham and Agassiz, were either the sons of great naturalists, carefully trained from boyhood to become themselves naturalists, or of men of education and culture, who were able to offer their sons the best opportunites for the development of their different tastes. That the son of a hard-working New York farmer, with no evidence of intellectual inheritance could by sheer force of hard work raise himself to the position he achieved, argues great powers and furnishes a striking and conspicuous proof of the value of our American form of social organization for the growth of intellectual character. It is possible that a poor farmer's boy with no friends or means, except those which he was able to conquer for himself, might have risen in some other country than the United States to the postion and influence held by Asa Gray at the time of his death, but it is hardly possible.

In the bright and active young botanist of Oneida County Dr. Torrey found the assistant he needed for the preparation of the *Flora of North America*, and the two men were soon associated in this work which was to occupy the attention of the younger more or less continuously until the last year of his life. The necessities of the work made it desirable that one of the two scientific partners should visit the collections and libraries of Europe, and so in November, 1838, Gray sailed from New York for Liverpool. This journey, which will be found fully described in these volumes in a series of letters written in the form of a journal to the members of Dr. Torrey's family, was, perhaps, the most momentous event in Dr. Gray's life in the influence it exerted on his scientific impulses. The friends that he made at this time, Sir William Hooker, from whom more than from any one else he seems to have derived scientific inspiration, Bentham, the Candolles, Martius, Decaisne, and the younger Hooker, who of them all now alone survives, were of the greatest assistance to him through life and added much to his happiness and success.

Space will not permit us to trace, step by step, the career of this remarkable man as displayed in his intimate correspondence with these and other friends, and all we can do is to call attention to the fact that these letters contain the best possible record of a useful and distinguished life, and contain also a vast amount of information about botany and the botanists of the century not to be found in any other book with which we are acquainted. They show the man, too, as well as the botanist, and we confess that to us the most delightful part of the whole book are the letters to Darwin, written during the War of the Rebellion, in which the Cambridge botanist, bristling with patriotism, berates the author of *The Origin of Species* on the hostility of England to the northern cause.

But, interesting as they are from a number of points of view, to those who knew the writer these letters fail to display all the wonderful astuteness of the writer's mind, his great enthusiasm, his genial and kindly wit and that buoyancy of spirits which made him one of the most delightful companions. Nor do we, in reading them, obtain a just idea of the helpfulness of the man, for the desire to help others was one of his strongest traits, and he was fond of showing it in a thousand ways, by criticism sometimes caustic, when rebuke was clearly the greatest kindness, by kind advice or direct assistance when assistance meant a loss to the giver of priceless time.

These letters relate the life of a happy, prosperous and useful man, which lacked only the completion of its great task to have been eminently successful. No man certainly ever worked harder or gave himself more cheerfully to labor. But, like other men of facile expression and great ambitions, he was too often led away from the main purpose of his life in efforts to excel in many directions. Perhaps Asa Gray lived too soon to have written an exhaustive *Flora of North America*, the work which occupied him at different times for fully half a century; but, looking at the two volumes of that half-finished book, we cannot but regret that other labors were allowed to interfere with the completion of a work for which he was specially fitted by aptitude, attainment and rare good judgment. The work so well begun still remains where he left it, nor in our time is it likely to be completed. The life of Asa Gray teaches us that with industry, application and enthusiasm a young man in this country can rise to the highest position and to the greatest distinction; and it teaches us another lesson not less valuable, that whatever a man's ability may be, great pieces

of work, like the one which Dr. Gray laid out for himself in early manhood, are only accomplished by men who have the power to concentrate themselves and to avoid the pitfalls which ambition, society or the desire to help others open in their path.

To these handsome volumes Mrs. Gray has joined three portraits of her husband, one showing the thoughtful and studious young man of thirty-one, the second taken thirty years ago when he was at the very height of his powers—a strong face, with remarkably intelligent eyes and the head of a great naturalist, the third in old age with the astute kindly smile and full gray beard—the Asa Gray that those of his associates now living best remember. There are views, too, of the botanist at his study-table, of his house in Cambridge as it appeared when he first occupied it in 1842, and of the garden over which he so long presided, with its range of buildings in which are deposited the priceless herbarium and library gathered by the greatest systematist and the most distinguished man of science America has produced.

Notes.

The first weekly journal devoted to horticulture which was ever published in France has been started under the title of *Le Petit Jardin*, under the directorship of Monsieur H. Martinet. It is rather remarkable that so important an industry as horticulture in France has had no weekly paper in its interest, while about a dozen weekly journals in England, devoted exclusively to horticulture, all seem to be in a flourishing condition.

A neat little pamphlet, consisting of reprints of two papers by Professor Herbert Osborn, one entitled "Fruit and Forest-tree Insects," and the other, "Some Iowa Farm Insects," has just come to hand. Within its sixty-seven closely printed and well-illustrated pages will be found very clear accounts of the life-histories of the insects which are most annoying to fruit-growers, farmers and gardeners, together with the most approved means of fighting them, so that really the pamphlet is a valuable handbook for every cultivator, not only in Iowa, but elsewhere in the country. Good popular literature of this sort is becoming so abundant that the time ought soon to arrive when the losses to agriculture and horticulture from destructive insects throughout the country will be materially lessened.

The December number of the *Orchid Review* concludes the first volume of that interesting publication. This new monthly has adhered strictly to the purpose announced in its first number, and the volume makes a complete and accurate record of what has been accomplished during the year in the way of the discovery and introduction of new Orchids and the production of others by hybridization, with good descriptions and figures of many of them, besides notes on interesting collections and cultural directions by experienced writers. The most valuable feature of Volume I. is, perhaps, the series of articles which have brought down the history of Orchid hybridization to the beginning of the year 1893. Nearly four hundred distinct hybrids have been traced and recorded here, and they belong to all the principal genera in cultivation. The December number of the *Review* contains a striking colored plate of the new Cypripedium Charlesworthii, the introduction of which has been probably the most interesting event of the year in the Orchid world. The plate shows a flower with a dorsal sepal of deep rose-purple, somewhat marbled toward the apex. The staminode is another very distinct feature, being ivory-white. Its nearest ally seems to be a Cypripedium Spicerianum, and it is likely to become quite as popular as that plant, although the two are very different in many respects. It will not only be valuable for decoration, but it ought to be a prize for the hybridist, since it has a color which has always been sought after, and when crossed with other richly colored forms the influence of this bright sepal will almost certainly be seen in the most striking features of its offspring.

The vegetable market is hardly less well supplied in variety now than during the summer season, and very frequently the same kind of vegetables fresh from southern fields, from northern hot-houses and held back in cold-storage from northern gardens, are found in market at the same time. During Christmas week Brussels sprouts, from Florida, sold for twenty cents a quart; egg-plants, from the same state, were twenty-five cents each, string beans twenty cents, and tomatoes forty cents a quart. Northern tomatoes, grown under glass, sold for fifty cents a pound, and hot-house asparagus, furnished upon order to dealers in choice vegetables, was two dollars a bunch. Havana okra brought fifty cents a hundred, and large peppers from Cuba a dollar a dozen. Southern cucumbers were five cents, and those from Boston hot-houses fifteen cents each. Jerusalem artichokes sold for fifteen cents a quart, and new beets and peas could be had at reasonable prices. Chicory, from New Orleans, was sixty cents a dozen. New lettuce, raised under glass, and sold at seventy-five cents a dozen heads, was not more fresh and crisp-looking than that which had been held in cold-storage for two months. Philadelphia mushrooms were a dollar a pound, and New Jersey sweet-potatoes sixty cents a peck. The supply of fruits is almost as varied. Several kinds of California grapes are still plentiful and cheap, and five-pound baskets of Concord and Catawba grapes bring only fifteen cents. Large pineapples cost but twenty-five cents, and Coe's Late Red plums, still in good condition, are offered at a dollar for five pounds. Strawberries are yet a luxury, none having come in from the south, and they command any price, from two to three dollars, for a tiny basket holding a dozen berries.

The venture of unusually large shipments of Christmas-trees in a season of exceptionally hard times was disastrous to not a few of the thirty large dealers who cut and send trees to this city from Maine, New Hampshire, Massachusetts, the Berkskire Hills, and some regions in the Adirondacks. While the wholesale price of a bundle of trees last year was a dollar to a dollar and twenty-five cents, the best prices this season were only a quarter of that amount, and many wagon-loads were disposed of at fifty cents to a dollar a load. Thousands of trees remained unsold and had to be carted away at considerable expense to the dealers, some of whom lost a thousand dollars in cash outlay. The work of cutting begins in October, and trees in open lots are selected as more stocky and symmetrical than those in woodlands. These are then sized, the branches closely wrapped with twine to economize space, and tied in bundles of from one to eight trees, according to size. During the last week of November and the first week in December they are shipped, and as many as one hundred and forty car-loads, say four hundred thousand trees, were offered at wholesale in New York and near-by cities during the fortnight before Christmas. The Balsam Fir is the most popular tree here, its leaves persisting longer than those of the Black Spruce, which is the tree most frequently seen in the Philadelphia and Newark markets. Hemlock, owing to the flexible and drooping quality of its branchlets, is not salable as a Christmas-tree, but large quantities of the twigs are used in the manufacture of so-called "fancy green," comprising stars, wreaths and other designs. Besides Hemlock, the leaves of Holly, Boxwood and Kalmia, Ground Pine and other Club-Mosses, mosses from tree-trunks, the fruits of Juniper, Black Alder, Bitter-sweet and Holly, which are unusually scarce this year, dried grasses and various so-called everlastings, are made into "rope" and set figures. Most of this manufactured green continues to come from Monmouth County, although the Lycopodium and raw material generally has been brought, since its extermination in that part of New Jersey, from New England and the Adirondacks. This year roping was sold as low as a dollar a hundred yards at wholesale, although when made of Kalmia-leaves it was much more expensive. Stars could be bought for a dollar a dozen on the steamer which brings these supplies daily from Keyport, New Jersey, and wreaths and triangles were forty and fifty cents a dozen. It is a noteworthy fact that the small pieces, as wreaths, sold better than they did last year, which seems to show an increase in the amount of cheaper decoration, while the roping, which is only used in churches and other large places, sold, as the trees did, at ruinous prices.

Mr. E. D. Dodwell, noted as the leading English authority on Carnations, has lately died at Oxford at the age of seventy-five years. For nearly half a century he devoted himself to the cultivation and improvement of Carnations, and especially of Picotees. He helped to organize Carnation societies in various parts of England, and for the last twenty-two years the exhibitions of the Carnation and Picotee Union have been held in his garden at Oxford. His work on the Carnation and Picotee was first published in 1886, and has reached several editions, the last of which was revised about two years ago. It is the standard work on the subject, and since Mr. Dodwell possessed considerable literary skill and a vigorous style, it is agreeable reading as well as a useful work.